Impact of “The Online League of Legends (LoL) GAME School” Program on the COVID-19 Education Crisis: Focusing on Korean Students’ Affective Domain

Junghye Fran Choi
Cyber University of Korea, Seoul, Republic of Korea
Seungho Bang
Seoul Metropolitan Office of Education’s Student Education Research Institute, Seoul, Republic of Korea

Abstract

**Purpose:** This study aims to discover the changes made to the affective domain of the students who participated in “the Online League of Legends(LoL) Game School” program during the COVID-19 education crisis. The program was conducted by the Seoul Metropolitan Office of Education’s Student Education Institute from August 2020 to July 2021 for elementary school students(fifth grade onward) to juniors in high schools in Seoul. The program consisted of game English, game science, game humanities, game writing, game-related songs, game music composition, game analysis and game strategies about the online game League of Legends, and adventure-based counseling(ABC) activities.

**Method:** Twenty-nine students participated in the survey to determine positive and negative affections, intrinsic motivation, and the most interesting and challenging activities. The PANAS scale was used to find out whether participants had positive or negative affections about the program. This survey was highly reliable, and the questionnaires were scored on a 7-point Likert scale each. To examine the students’ intrinsic motivation, four intrinsic motivation factors were selected: pleasure, flow, challenge, and growth potential. The participants described the most interesting and challenging activities of the Online LoL Game School program with the help of open-ended questions.

**Results:** The participants had strong positive affections for the program(PA: 5.3928) instead of negative affections(NA: 1.9598), and experienced “flow”(5.26) the most among the four factors. Also, the most interesting and challenging activity of the program was game English.

**Conclusion:** These study findings revealed that 1) the students had positive affections about the Online LoL Game School program, 2) among the four intrinsic motivation factors, pleasure, flow, challenge, and growth potential, the students experienced flow the most, 3) the most interesting and challenging activity was game English. This study uncovered that the Online Game School program influenced the students’ positive affections and intrinsic motivation. Online education programs related to games, in which many students showed interest, can be triggers for students to engage in active learning and reconsider their growth and future careers. The study findings and attempts can help create a positive school climate and bring about social change to provide Generation Z students with a pleasurable and meaningful learning experience.

[Keywords] League of Legends(LoL), Online Game School, Online Learning, Affective Domain, Korean Students

1. Introduction

The COVID-19 pandemic has caused a crisis in education. Schools have adopted blended learning situations that combine online and offline classes, and consequently, conflicts with parents have become more serious as students spend more time at home[1]. The prolonged outbreak has reduced the scope of outdoor activities for students and increased indoor activities, especially related to digital media. According to a pre-pandemic survey conducted by the
Ministry of Science and Information Communication Technology (ICT) in South Korea in 2019[2], 30.2% of teenagers aged 10 to 19 were found to be media-dependent. This situation is getting more severe in this Untact Era. According to a survey conducted by the Korea Youth Policy Institute in 2020[3], elementary school students primarily used YouTube (34.7%) and games (30.2%) on their mobile phones.

Before the pandemic, a game-like learning program was applied to game overflow high school students in Seoul in 2019[3]. Eight out of 13 students in the high-risk and the potential risk user group based on the youth Internet overuse self-diagnosis test have changed to the regular end user group after the program[3]. Based on these attempts, the Seoul Metropolitan Office of Education's Student Education Institute conducted a pilot program for online game overflow students at a middle school in Seoul[4]. It was observed that 96.6% of the students were satisfied with the program. The findings of the pilot program provided insights regarding the students’ active participation and positive educational effects under the theme of "game." The results led to run “the Online LoL Game School” program by the Seoul Metropolitan Office of Education[5]. From August 2020 to July 2021, a total of eight programs were conducted for elementary school students (fifth grade onward) to juniors in high schools in Seoul. This study aims to discover the changes made to the affective domain of the students who participated in “the Online LoL Game School” program.

2. Research Background

2.1. Challenges associated with media usage due to COVID-19

The COVID-19 crisis has rapidly changed everyday life as well as the education ecosystem. The number of students with learning deficits has increased, and conflicts between parents and children regarding long-term media access at home has been severe[6][7]. According to a recent survey in Korea[8], middle school students mainly watched video clips (31%) and played games on mobile phones (20.5%), while singing and dancing (10.5%), exercising, and physical activities (8.1%) constituted a relatively small. These results suggest that excessive media access can cause a variety of physical and affective developmental problems for students in their growth. It can result in prolonged learning deficits because of reduced learning time[9]. Moreover, in 2020, the Seoul Institute for Education Policy announced a decrease in middle school students’ Korean, math, and English academic performance levels in the middle-leveled students[10]. As the upper ranks increased, so did the lower ranks[10]. Based on the results, the Ministry of Education prepared a countermeasure related to the foundation education measures for the second semester of 2021[11]. To restore the students’ academic performance, the plans will focus on supplementing the curriculum for a total of 2.03 million students[11]. This necessitates an examination of the outcomes of these attempts, which can cover learning deficits effectively and help the students enhance their academic performance by considering their intrinsic motivation.

Meanwhile, there has been a surge in conflicts between parents and children at home due to the media overuse during the pandemic[12]. With the rapid increase in media overflow among pre- and post-pandemic students, there is a growing need for realistic measures to guide children to use media wisely rather than prevent its use altogether[13]. There is a need to suggest a variety of leisure activities related to exploring their future careers rather than just engaging in media use[14]. Parents need to especially consider their children as digital natives, not digital immigrants, because parents’ perspectives on media use, directly and indirectly, affects their children’s behaviors and thoughts[15]. Above all, the biased views of games as harmful, violent, and negatively influencing children’s affections is causing conflicts between parents and children[16].

The COVID-19 crisis has created an environment where people have simultaneously experienced media harms and benefits. Some claim that it is the right time to make more efforts to
understand the media’s features and languages are for students, parents, and educational stakeholders. This is based on objectively understanding media as a part of media literacy[17]. Game is a form of media, and analyzing the traits and languages in games would help understand it objectively[18]. These attempts are referred to as game literacy, which requires students, parents, teachers, and education policymakers to reconsider game as a useful educational medium and find practically beneficial ways to use it[19][20].

2.2. Characteristics of the league of legends game

The League of Legends(LoL) game was developed by Riot Games in 2009 and is played by more than 100 million users worldwide including millions of users in Korea[21]. Korea, a leading country of e-sports has adopted the LoL game as an e-sports event[22], and a lot of teenagers around the world enjoy the game[23]. LoL is a game in which 5 players use various strategies and weapons as a team to occupy the opposing team’s camp, and the entire team must utilize the individual team members' abilities to win the game[24]. According to Kim et al.[25], individual competence cannot lead to victory, and teamwork based on interaction and communication between team members is the most significant factor for winning the game. There are five positions of the LoL game players in a team: top, jungle, mid, bottom, and supporter. Depending on the points, more than 150 characters can be developed. The fun elements of the LoL game include satisfaction, fulfillment, and social networking by co-working. These fun elements greatly appeal to teenagers because they can experience a fun through the game that is hard to find in their busy lives[26].

2.3. Online LoL game school program

The Seoul Metropolitan Office of Education’s Student Education Institute conducted the Online LoL Game School program to contribute to the students' healthy play culture and to improve basic learning skills related to the curriculum during the pandemic[27]. Moreover, the LoL game school invited professional gamers and e-sports experts to provide opportunities to actively explore the students’ prospects of building a future careers in games[28].

The Online LoL Game School was conducted based on the students’ high satisfaction with the pilot program at a middle school in Seoul. It was conducted as a real-time online class using Zoom, a web conferencing tool, for fifth grade elementary school students to juniors in high school interested in games, especially LoL. This program was announced in the home newsletter of public elementary, middle, and high schools in Seoul. Considering the pandemic situation, the participants were allowed to access the online classes from home. In 2020, a total of four game schools were opened, and each session had four classes. One thousand five hundred students participated in the game school program in 2020. Four schools were held, and a total of 703 students participated in 2021. Eight classes were held per session for one and a half hours each.

The school was run by education researchers, dispatched teachers, and training instructors responsible for managing the students, communicating with students and parents, and designing learning contents. Game experts taught game analysis and game strategies, and were in charge of recruiting professional e-sports players. Game English and game science were taught by field teachers at a middle school in Seoul.

The Online LoL Game School program included game English, game science, game humanities, game writing, adventure based counseling(ABC) activities, and game strategy related to the LoL game. It also consisted of game music activities to help express the students’ feelings related to the games, sing game-related songs and compose game songs. Each class consisted of 10 minutes each of game English, game science, game humanities, game writing, and ABC activities or game music along with 40 minutes of LoL game analysis and game strategies. In addition, ABC activities and game music sessions were held in the class of students’ choice using Zoom's small room function. Game experts provided game-related consultations such as analysis of students’ game strategies. This program also provided ABC activities for positive thinking and building
positive relationship with team players. After the online class, the students uploaded assignments and communicated with the instructors using the web community "Inner Quarantine" Naver Café.

The purpose of this study was to investigate the effects of the Online LoL Game School on the affective domain of the participating students. In the field of education, the affective domain of the learners increases interest in learning and helps learning in the cognitive domain, and the affective characteristics, such as interest, motivation, and attitude toward the subject, enable the learner to focus on learning[15]. In addition, since the affective area obtained as a result of learning also acts as an important factor in social life, it is necessary to meaningfully examine the affective domain when measuring the educational effect. Therefore, the aim of this study was to discover whether the participating students had positive or negative affections about the Online LoL Game School program and find out which intrinsic motivation factors were affected.

3. Methodology

3.1. Participants

There were 29 participants in total in this study. By grade, there were 10 elementary school students in fifth grade, 10 elementary school students in sixth grade, three middle school students in the first grade, three in second grade, and one in the third grade, and finally one high school student in first and second grade each. Ten students participated in the first school, eight were in the second school, two in the third school, and nine in the fourth school in 2021.

3.2. Research methods

3.2.1. Survey using PANAS scales

The Positive Affection Negative Affection Scale(PANAS) was used to identify the affective domains of the students who participated in the Online LoL Game School. The PANAS is known as a reliable scale used worldwide to measure affections[29]. The PANAS used to analyze the learner-defined effectiveness of this program was investigated in two factorial structures: the positive affection and the negative affection for the experience. Based on “Development and Validation of Brief Measures of Positive and Negative Affect: The PANAS Scales”[30], a total of 16 questions were modified for this study and examined with a 7-point Likert scale <Table 1>.

<table>
<thead>
<tr>
<th>Positive affection(PA)</th>
<th>Negative affection(NA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fun</td>
<td>5. Easy</td>
</tr>
<tr>
<td>2. Happy</td>
<td>6. Exciting</td>
</tr>
<tr>
<td>3. Proud</td>
<td>7. Interesting</td>
</tr>
<tr>
<td>4. Good</td>
<td>8. Active</td>
</tr>
<tr>
<td>1. Worried</td>
<td>5. Difficult</td>
</tr>
<tr>
<td>2. Unstable</td>
<td>6. Depressed</td>
</tr>
<tr>
<td>3. Frustrated</td>
<td>7. Shy</td>
</tr>
<tr>
<td>4. Tough</td>
<td>8. Lonely</td>
</tr>
</tbody>
</table>

3.2.2. Survey on the students’ intrinsic motivation

Motivation is a factor for predicting human behavior, which is divided into extrinsic motivation and intrinsic motivation[31]. External motivation is given in an external environment and focuses on purpose-oriented reasons such as the rewards and benefits gained when performing a particular action[31]. Intrinsic motivation arises from the actions themselves, rewarding, pleasing, fulfilling, contented, confident, and spontaneous needs[32][33][34]. Intrinsic motivation is a meaningful indicator of sustainable growth as it can produce more positive results from
a long-term perspective when performing a task[33]. In particular, intrinsic motivation in learning experiences promotes growth with satisfaction in the learning process rather than just results, leading to positive outcomes[32][34].

Specifically, this study delved into the educational effectiveness of students' affective domain by examining the intrinsic motivations experienced by the students in the Online LoL Game School program. Four factors were selected to analyze intrinsic motivation: pleasure, flow, challenge, and growth potential. A total of 14 questionnaires were developed on a 7-point Likert scale. The questionnaires consisted of pleasure (three questions), flow (three questions), challenge (three questions), and growth potential (five questions). The survey of intrinsic motivation is also highly reliable ($\alpha=.87$, $M=5.12$, $SD=2.10$).

3.2.3. Open-ended questions regarding students’ preferences

Students who participated in this study were asked to describe the most interesting and the most challenging activities of the Online LoL Game School program, and give reasons for their choice. This study investigated what kinds of activities students preferred and why.

4. Research Results

4.1. Results of the affective domain for using PANAS scale

The PANAS scale was used to determine whether participants had positive or negative affections about the Online LoL Game School program. The Cronbach Alpha Coefficient was identified to verify the reliability of the survey from the subject's perspective. If this coefficient is 0.7 or higher, it is a highly reliable survey[35]. The survey on the PANAS scale showed a high reliability of 0.805 for 16 items. The results of the PANAS scale for the LoL game schools program showed that the positive affection (PA) was 5.3928 and the negative affection (NA) was 1.9598 out of 7 points <Table 2>.

<table>
<thead>
<tr>
<th>LoL game school program</th>
<th>Frequency</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
<th>Reliability cronbach’s alpha value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>29</td>
<td>4.7857</td>
<td>5.7857</td>
<td>5.3928</td>
<td>1.8756</td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td>29</td>
<td>3.8214</td>
<td>1.3214</td>
<td>1.9598</td>
<td>1.1795</td>
<td>.805</td>
</tr>
<tr>
<td>Effective no.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The participants had strong positive affections for the program (PA: 5.3928) rather than negative affections (NA: 1.9598). They associated this program with fun, happiness, pride, goodness, ease, excitement, interest, and activity. Among the negative affections (such as worried, unstable, frustrated, tough, difficult, depressed, shy, and lonely), it turned out that "worried" (NA: 3.8214) was stronger than the rest <Figure 1>.
4.2. Results of the students’ intrinsic motivation toward the program

The results of students’ intrinsic motivations for the Online LoL Game School program are as follows. Among the four factors, which included pleasure, flow, challenge, and growth potential, participants experienced “flow” (5.26) the most. They answered that they experienced it in the following order: flow (5.26), pleasure (5.22), challenge (5.09), and growth potential (4.91) <Table 3>.

Table 3. Results of intrinsic motivation.

<table>
<thead>
<tr>
<th>Intrinsic motivation factors</th>
<th>Pleasure</th>
<th>Flow</th>
<th>Challenge</th>
<th>Growth potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>5.22</td>
<td>5.26</td>
<td>5.09</td>
<td>4.91</td>
</tr>
<tr>
<td>SD</td>
<td>2.13</td>
<td>2.17</td>
<td>2.09</td>
<td>2.02</td>
</tr>
</tbody>
</table>

4.3. Results of open-ended questions about the program

The program’s most interesting activities were game English, and game song-making, and adventure-based game activities in that order. In addition, game humanities, game terminology learning, game operations, Q&A with professional gamers, and game science tied for fourth-ranked. The students responded that aforementioned activities were interesting, informative, and easy to understand. Game English was the most challenging activity in this program. The students mentioned that they felt that game English was challenging because they did not like English itself. The students also considered assignments, game strategies, learning game terms and knowledge, and game humanities challenging.

5. Discussion and educational implications

The following findings were identified through this survey:

a. Participating students had positive affections about the Online LoL Game School program.
b. Among the intrinsic motivation factors, the students answered that they experienced flow the most followed by pleasure, challenge, and growth potential.
c. The most interesting and the most challenging activity was game English.
These results represented that the Online LoL Game School programs can provide positive affections to the students in the current educational crisis caused by the COVID-19 pandemic. Also, the students had a strong sense of the intrinsic motivation including flow, pleasure, challenge, and growth potential in that order. The program provided various educational contents based on the theme of the LoL game in which the participants were interested. It is necessary to develop the game English curriculum, considering its learning effectiveness.

This study’s result cannot be generalized because of the small sample size. However, the educational implications reveal that the program, which consists of various educational contents under the overarching theme of the LoL game, contributed to students’ pleasurable and meaningful learning experiences. Game-related educational content can be a trigger for students to learn more and to reconsider their growth and future careers. Largely, it is not easy to be triggered by other attempts in short periods. This study provides the insights that real-time online education programs based on games can have a positive effect on students from different grades and different schools in the public education sites.

In particular, the study found that games, which are often perceived as a hindrance to study, can be useful and beneficial educational tools to influence positive affections for students in the public education sector. This approach can also be applied to other educational environments around the world during the pandemic. More programs need to be developed based on the research findings for further studies. The study findings and attempts can help create a positive school climate and bring social change to provide Generation Z students with a pleasurable and meaningful learning experience.

6. References

6.1. Journal articles


6.2 Books


6.3 Conference proceedings


6.4 Additional references

7. Appendix

7.1 Authors contribution

<table>
<thead>
<tr>
<th>Initial name</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Author</td>
<td>JFC</td>
</tr>
<tr>
<td></td>
<td>- Set of concepts ☑</td>
</tr>
<tr>
<td></td>
<td>- Design ☑</td>
</tr>
<tr>
<td></td>
<td>- Getting results ☑</td>
</tr>
<tr>
<td></td>
<td>- Analysis ☑</td>
</tr>
<tr>
<td></td>
<td>- Make a significant contribution to collection ☑</td>
</tr>
<tr>
<td></td>
<td>- Final approval of the paper ☑</td>
</tr>
<tr>
<td></td>
<td>- Corresponding ☑</td>
</tr>
<tr>
<td>Corresponding Author*</td>
<td>SB</td>
</tr>
<tr>
<td></td>
<td>- Play a decisive role in modification ☑</td>
</tr>
<tr>
<td></td>
<td>- Significant contributions to concepts, designs, practices, analysis and interpretation of data ☑</td>
</tr>
<tr>
<td></td>
<td>- Participants in Drafting and Revising Papers ☑</td>
</tr>
<tr>
<td></td>
<td>- Someone who can explain all aspects of the paper ☑</td>
</tr>
</tbody>
</table>